

A semiconductor device manufacturing apparatus using plasma and a thin film forming method using the apparatus. The apparatus comprises a chamber provided with an inlet and an outlet of gas, the chamber having an upper part with a dome configuration; a susceptor provided in the chamber to permit a wafer to be placed thereon; and a plasma electrode to which RF power is applied to form plasma in the chamber; wherein the plasma electrode has a dome configuration to cover the upper part, and wherein the upper polar part of the electrode is cut horizontally to form an opening. According to the present invention, it is possible to form thin film having not only good thickness uniformity but also excellent film quality.